CLAIMS:

1. A method of image compression, said method comprising the steps of:

provinding digital image data in a computer-readable format, said digital image data including data on values and coordinates for a plurality of pixels;

selecting a region of interest of an image represented by said digital image data;

sorting and prioritizing said digital image data according to at least two priority categories, with digital image data corresponding to the region of interest having a higher priority than digital image data corresponding to areas outside of the region of interest; and

transmitting said sorted and prioritized digital image data to a remote location, with the digital information data corresponding to the region of interest being transmitted with higher priority than the areas outside of the region of interest.

2. A method according to claim 1, comprising the further step of:

reconstructing the transmitted digital image data at the remote location, said step of reconstructing comprising the step of decoding the sorted and prioritized digital image data, wherein the region of interest is reconstructed at a faster rate than digital image data corresponding to areas outside of the region of interest, said faster rate being provided by said sorting and prioritizing of said digital image data corresponding to the region of interest.

3. A method according to claim 1, comprising the further step of

reconstructing the transmitted digital image data, said step of reconstructing comprising the steps of

decoding the sorted and prioritized digital image data, wherein the region of interest is reconstructed at a higher fidelity and lower loss than the areas outside of the region of interest, said higher fidelity and lower loss being provided by said sorting and prioritizing of said digital image data corresponding to the region of interest.

4. A method according to claim 1, wherein said sorting and prioritizing of said digital image data comprises shifting bits of transform coefficients corresponding to the digital image data by a predetermined amount, said predetermined amount corresponding to a desired scale-up rate for reconstruction of the region of interest.

5. A method for encoding and decoding an image, said method comprising the steps of:

providing digital image data in a computer-readable format, said digital image data including data on values and coordinates for a plurality of pixels;

sorting said digital image data according to a mathematical sorting protocol, said digital image data being sorted and prioritized according to a predetermined prioritization formula;

transmitting said sorted data to a receiver, and repeating said sorting and transmitting until a partial reconstructed image appears on a display at the receiver;

selecting a region of interest based upon said partial reconstructed image;

transmitting data from said receiver to a computer transmitting data identifying the selected region of interest;

modifying the sorting of the digital image data based upon the selected region of interest, wherein digital image data corresponding to the region of interest is sorted and prioritized to have a higher priority than digital image data corresponding to areas outside of the region of interest; and

transmitting said modified sorted and prioritized data to the receiver, with said region of interest being transmitted with higher priority than the areas outside of the region of interest.

6. A system for compressing a digital image, said system comprising:

input means for inputting digital image data in computer-readable format with the digital image data including data on values and coordinates for a plurality of pixels for an image;

display means connected to said input means for displaying the digital image data;

selecting means connected to said display means for selecting a region of interest of an image represented by said digital image data;

sorting and prioritizing means connected to said selecting means for sorting and prioritizing said digital image data according to at least two priority categories, with digital image data corresponding to the region of interest having a higher priority than digital image data corresponding to areas outside of the region of interest; and

transmitting means for transmitting said sorted and prioritized data to a remote location, with said transmitting means transmitting the digital image data corresponding to the region of interest with higher priority than the areas outside of the region of interest.

7. A system as recited in claim 6, further comprising:

receiving means for receiving the transmitted digital image data;

reconstructing means connected to said receiving means for reconstructing the transmitted digital image data, said reconstructing means including decoding means for decoding the sorted and prioritized digital image data;

wherein the region of interest is reconstructed by said reconstructing means at a faster rate than digital image data corresponding to areas outside of the region of interest, with the faster rate being provided by the decoding means decoding the digital image data corresponding to the region of interest in a prioritized manner.

8. A system according to claim 6, said system further comprising:

reconstructing means connected to said receiving means for reconstructing the transmitted digital image data, said reconstructing means including decoding means for decoding the sorted and prioritized digital image data;

wherein the region of interest is reconstructed by said reconstructing means at a higher fidelity than digital image data corresponding to areas

outside of the region of interest, with the higher fidelity being provided by the decoding means decoding the digital image data corresponding to the region of interest in a prioritized manner.

9. A system for encoding and decoding an image, said system comprising:

input means for inputting digital image data in computer-readable format with the digital image data including data on values and coordinates for a plurality of pixels for an image;

sorting means for sorting said digital image data according to a mathematical sorting protocol, said digital image data being sorted and prioritized by said sorting means according to a predetermined prioritization formula;

transmitting means connected to said sorting means for transmitting said sorted data, wherein said sorting means repeats a sorting of said digital image data and said transmitting means repeats the transmission of said data;

receiving means for receiving said transmitted data from said transmitting means, wherein said transmitted data, said receiving means including a display means thereupon, said display means displaying said transmitted data as a partial reconstructed image during said transmission;

selecting means connected to said receiving means for selecting a region of interest of said partial reconstructed image;

region-of-interest transmitting means for transmitting data corresponding to said selected region-of-interest to said sorting means,

wherein said sorting means modifies the sorting of the digital image data based upon the data corresponding to the selected region of interest, wherein digital image data corresponding to the selected region of interest is sorted and prioritized by said sorting means to have a higher priority than digital image data corresponding to areas outside of the selected region of interest, and wherein said transmitting means transmits said modified sorted and prioritized data to the receiving means, with said selected region of

interest being transmitted with a higher priority than areas outside of the region of interest.

10. A computer program embodied on a computer readable medium, said computer program controlling a general purpose computer to perform the steps of:

displaying digital image data on a display, said digital image data including data on values and coordinates for a plurality of pixels;

permitting a user to select a region of interest on an image represented on said display by said digital image data;

sorting and prioritizing said digital image data according to at least two priority categories, with digital image data corresponding to the selected region of interest having a higher priority than digital image data corresponding to areas outside of the region of interest; and

transmitting said sorted and prioritized digital image data to a remote location, with the region of interest being transmitted with higher priority than the areas outside of the region of interest.

11. A computer program embodied on a computer readable medium as recited in claim 10, said computer program controlling a computer at the remote location to perform the step of reconstructing the transmitted digital image data at the remote location, the step of reconstructing comprising the step of decoding the sorted and prioritized digital image data, wherein the region of interest is constructed at a faster rate than digital image data corresponding to areas outside of the region of interest, said faster rate being provided by said prioritizing of said region of interest.

12. A computer program embodied on a computer readable medium as recited in claim 10, said computer program controlling a computer at the remote location to perform the step of reconstructing the transmitted digital image data at the remote location, the step of reconstructing comprising the step of decoding the sorted and prioritized digital image data, wherein the region of interest is constructed at a higher fidelity than digital image data

22

corresponding to areas outside of the region of interest, said higher fidelity being provided by said prioritizing of said region of interest.

13. A computer program embodied on a computer readable medium, said computer program controlling a general purpose computer to perform the steps of:

displaying digital image data on a display, said digital image data including data on values and coordinates for a plurality of pixels;

sorting said digital image data according to a mathematical sorting protocol, said digital image data being sorted and prioritized according to a predetermined prioritization formula;

transmitting said sorted data to a receiver, and repeating said sorting and transmitting until a partial reconstructed image appears on a display at the receiver;

selecting a region of interest based upon said partial reconstructed image;

transmitting data from said receiver to a computer transmitting data identifying the selected region of interest;

modifying the sorting of the digital image data based upon the selected region of interest, whereby digital image data corresponding to the region of interest is sorted and prioritized to have a higher priority than digital image data corresponding to areas outside of the region of interest; and

transmitting said modified sorted and prioritized data to the receiver, with said region of interest being transmitted with higher priority than the areas outside of the region of interest.

14. A method of image compression, said method comprising the steps of:

providing digital image data in a computer-readable format, said digital image data including data on values and coordinates for a plurality of pixels;

sorting and prioritizing said digital image data according to a mathematical sorting protocol, said digital image data being sorted and prioritized according to a predetermined prioritization formula;

transmitting said sorted data to a receiver, and repeating said sorting and transmitting as the image data is transmitted to the receiver;

selecting a region of interest of said digital image data;

modifying the sorting of the digital image data based upon the selected region of interest, wherein digital image data corresponding to the region of interest is sorted and prioritized to have a higher priority than digital image data corresponding to areas outside of the region of interest; and

transmitting said modified and sorted prioritized data to the receiver, with said region of interest being transmitted with higher priority than the areas outside of the region of interest.

15. A method of image compression as recited in claim 1, wherein said step of transmitting said sorted and prioritized digital image data to the remote location includes transmitting the sorted and prioritized digital image data onto an internet, wherein said remote location is a location on the internet, wherein said method further comprises the step of

reconstructing the transmitted digital image data at the remote location, said step of reconstructing comprising the step of decoding the sorted and prioritized digital image data, wherein the region of interest is reconstructed at a faster rate than digital image data corresponding to areas outside of the region of interest, said faster rate being provided by said sorting and prioritizing of said digital image data corresponding to the region of interest.

16. A method of image compression as recited in claim 1, wherein said step of transmitting said sorted and prioritized digital image data to the remote location includes transmitting the sorted and prioritized digital image data onto an internet, wherein said remote location is a location on the internet, wherein said method further comprises the step of

reconstructing the transmitted digital image data at the remote location, said step of reconstructing comprising the step of decoding the sorted and prioritized digital image data, wherein the region of interest is reconstructed at a higher fidelity than digital image data corresponding to areas outside of

the region of interest, said higher fidelity being provided by said sorting and prioritizing of said digital image data corresponding to the region of interest.

17. A method for encoding and decoding an image as recited in claim 5, wherein said step of transmitting said sorted data includes transmitting said sorted data onto a network, wherein said receiver is a receiving computer on said network, and wherein said step of selecting the region of interest is performed at said receiving computer.

18. A method for encoding and decoding an image as recited in claim 17, wherein said network is an internet network.

19. A system for compressing a digital image as recited in claim 6, wherein said transmitting means transmits said sorted and prioritized data onto a network, wherein the remote location is a receiving computer on the network, and

wherein the receiving computer includes reconstructing means therein for reconstructing the transmitted digital image data, and wherein the region of interest is reconstructed by the reconstructing means at one of a faster rate and a higher fidelity than digital image data corresponding to areas outside of the region of interest, with the one of the faster rate and the higher fidelity being provided by the decoding means decoding the digital image data corresponding to the region of interest in a prioritized manner.

20. A system for encoding and decoding an image as recited in claim 9, wherein said transmitting means transmits said sorted data onto a network, and wherein the receiving means is a receiving computer on said network.